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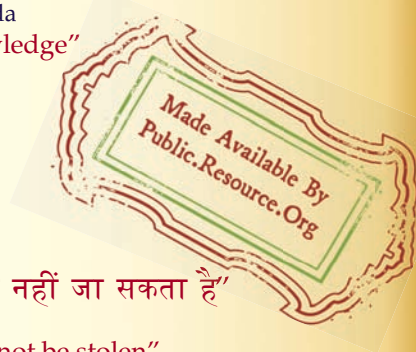
IS 13714 (1993): Dunnage pallets - Ware housing [TED 12: Freight Containers and Pallets]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक

निभार (डनेज) पैलेट — भण्डार ग्रह — विशिष्ट

Indian Standard

DUNNAGE PALLETS — WAREHOUSING —
SPECIFICATION

UDC 621'869'82 : 658'784

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

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Price Group 3

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pallets Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

DUNNAGE PALLETS — WAREHOUSING — SPECIFICATION

1 SCOPE

1.1 This standard covers materials, dimensions and other requirements of dunnage pallets used in warehouses/godowns for stacking of foodgrain bags for providing protection against floor moisture and biodegradation and for aeration of stored items over the pallets.

2 REFERENCES

2.1 The following Indian Standards are necessary adjuncts to this standard:

IS No.	Title
401 : 1982	Code of practice for preservation of timber (<i>third revision</i>)
707 : 1976	Glossary of terms applicable to timber technology and utilisation (<i>second revision</i>)
723 : 1972	Steel countersunk head wire nails (<i>second revision</i>)
3971 : 1976	Glossary of terms on pallets (<i>first revision</i>)

3 TERMINOLOGY

For the purpose of this standard the terms and definitions given in IS 707 : 1976 and IS 3971 : 1976 along with the following shall apply.

3.1 Suitability Coefficient

The value of a timber species for the use of dunnage pallet evaluated by taking into consideration the strength and stiffness as a beam and suitability as a column.

4 DIMENSIONS

4.1 The overall dimensions of a pallet shall be as below, subject to the manufacturing tolerances of ± 5 mm.

Length :	1 500 mm
Width :	600 mm
Height :	120 mm

5 MATERIALS

5.1 Timber

Any of the timber species having comparative strength coefficient for dunnage pallets as 70 or more, with respect to Teak taken as 100, shall be used as listed in Annex A, subject to certain species being treated in the manner described therein. Any other suitable timber not included in Annex A may also be used with the prior approval, in writing, of the purchaser.

5.1.1 As far as possible timber, scantlings of only one species shall be used for the manufacture of any one pallet.

5.1.2 The timber shall be seasoned to a moisture content not exceeding 18 percent and the inclination of grain shall not exceed 1 in 10. The timber shall be free from objectionable knots (see 5.1.2.1), centre heart (pitch), insect attack, any kind of decay, warping, splits and any other defect which may reduce the strength or usefulness of the pallet. Pin holes (dead infestation) shall be permissible provided they are not of powder post beetles and are scattered (not concentrated).

5.1.2.1 Objectionable knots

A live knot in a scantling shall be considered objectionable, if its diameter along the major axis exceeds one-third of the width of the scantling, provided such knots do not reach the edge of the member and are not so numerous or grouped or located as to affect unduly the strength of the pallet, or are situated within 25 mm from a place through which a nail may be driven.

A dead knot in a scantling shall be considered objectionable, if its diameter along the major axis exceeds one-fourth of the width of the scantling, provided such knots do not reach the edge of the member and are not so numerous or grouped or located as to affect unduly the strength of the pallet or are situated within 25 mm from a place through which a nail may be driven.

5.2 Nails

Mild steel countersunk head wire nails conforming to IS 723 : 1973 shall be used for the fabrication of pallets.

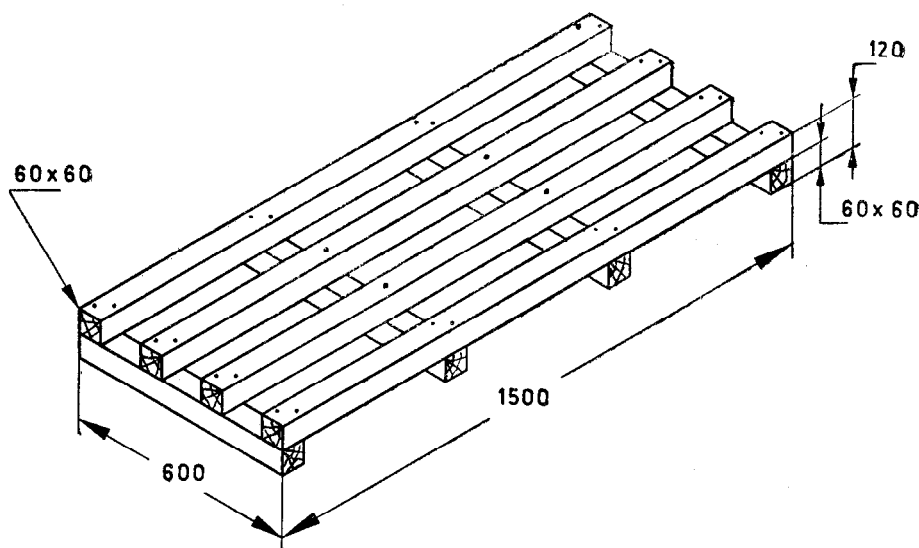
5.2.1 The length and shank diameter of the nails shall be as below:

Length :	150 mm
Diameter :	5 mm

6 CONSTRUCTION

6.1 The pallet shall be fabricated from four scantlings of size 600 × 60 × 60 mm (bottom), 1 500 × 60 × 60 mm (top) as illustrated in Fig. 1. Each scantling shall be a single piece (no joints permitted) of uniform cross-section, even thickness and reasonably smooth.

6.1.1 The grain of the timber shall be in the direction of the longest dimension.



All dimensions in millimetres.

FIG. 1 DUNNAGE PALLET

6.1.2 The bottom and top scantlings shall be equally spaced. The top scantlings shall be nailed to the bottom scantlings to form a rectangular rigid pallet. There shall be two nails at all edge joints and one nail at other joints and shall generally be placed at a distance of about 25-30 mm from either of the edges. In all 28 nails shall be used for the fabrication of one pallet and driven without causing splitting of the scantlings. The nails shall be driven 3 mm inside wood so that their heads are not protruding on the surface.

7 WORKMANSHIP AND FINISH

Each nails shall be clinched not less than 25 mm and flushed with the bottom surface of scantlings. The clinching shall be done along the grain of timber.

8 CRITERIA OF CONFORMITY

Each pallet shall be examined for visual defects and inspected for dimensional requirements.

9 DELIVERY

Unless otherwise specified, the pallets shall be delivered in a complete assembled form.

10 MARKING

10.1 The pallet shall be legibly and indelibly marked with the following information:

- Manufacturer's name or initials or recognized trade-mark;
- Year and month of manufacture; and
- Any other information as specified by the purchaser.

10.2 Standard Mark

Details are available with the Bureau of Indian Standards.

ANNEX A
(Clause 5.1)

SPECIES OF TIMBER FOR DUNNAGE PALLETS AND THEIR TREATMENT

A-1 SPECIES OF TIMBER

A-1.1 The timber for dunnage pallets shall be any of the species listed below:

SI No.	Botanical Name	Trade Name	Comparative Strength Coefficient for Pallets with Teak Taken as 100
1.	* <i>Acacia leucophloea</i>	hiwar	77
2.	* <i>Acacia melanoxylon</i>	—	87
3.	<i>Acacia nilotica</i>	babul	86
4.	* <i>Acacia tortilis</i>	—	90
5.	* <i>Acrocarpus fraxinifolius</i>	mundani	105
6.	* <i>Adina cordifolia</i>	haldu	84
7.	* <i>Adina oligocephala</i>	—	97
8.	* <i>Aglaia roxburghina</i>	aglaia	123
9.	<i>Albizia lebbeck</i>	kokko	94
10.	* <i>Albizia lucida</i>	—	99
11.	<i>Albizia procera</i>	safed siris	87
12.	<i>Albizia odoratissima</i>	kala siris	124
13.	<i>Altingia excelsa</i>	jutili	107
14.	<i>Amoora</i> spp.	amari	92
15.	<i>Anogeissus acuminata</i>	yon	105
16.	<i>Anogeissus latifolia</i>	axle wood	97
17.	* <i>Anogeissus pendula</i>	kardhai	96
18.	<i>Aphanamixis polystachya</i>	pitraj	91
19.	<i>Artocarpus chaplasha</i>	chaplash	78
20.	<i>Artocarpus heterophyllus</i>	kathal	78
21.	<i>Artocarpus hirsutus</i>	aini	96
22.	<i>Azadirachta indica</i>	neem	83
23.	<i>Betula alnoides</i>	birch	88
24.	* <i>Bischofia javanica</i>	uriam	76
25.	<i>Bridelia retusa</i>	kassi	80
26.	* <i>Calopoyllum apetalum</i>	poon	92
27.	<i>Calophyllum elatum</i>	poon	91
28.	* <i>Canarium strictum</i>	white dhup	93
29.	* <i>Carallia brachiata</i>	carallia (maniawga)	93
30.	<i>Careya arborea</i>	kumbi	112

*Subject to treatment prescribed in A-2.

Sl No.	Botanical Name	Trade Name	Comparative Strength Coefficient for Pallets with Teak Taken as 100
31.	<i>Cassia fistula</i>	amaltas	97
32.	<i>Castanopsis</i> spp.	Indian chestnut	82
33.	* <i>Casuarina equisetifolia</i>	casuarina	93
34.	<i>Cedrus deodara</i>	deodar	84
35.	* <i>Chloroxylon swietenia</i>	satin wood	112
36.	<i>Chukrasia velutina</i>	chickrassy	78
37.	* <i>Cullenia rosayroana</i>	karani	103
38.	<i>Cupressus torulosa</i>	cypress	76
39.	<i>Dalbergia sissoo</i>	sissoo	87
40.	* <i>Dillenia</i> spp.	dillenia	77
41.	<i>Diospyros</i> spp.	ebony	90
42.	<i>Diploknema butyracea</i>	hill mahua	97
43.	* <i>Dipterocarpus macrocarpus</i>	hollong	111
44.	<i>Dipterocaropus</i> spp.	gurjan	108
45.	<i>Dysoxylum malabaricum</i>	white cedar	94
46.	<i>Eucalyptus globulus</i>	blue gum	121
47.	* <i>Eucalyptus</i> spp.	—	70
48.	* <i>Exbucklandia populnea</i>	pipli	86
49.	<i>Grewia tillifolia</i>	dhaman	114
50.	<i>Hardwickia binnata</i>	anjan	71
51.	<i>Kingiodendron pinnatum</i>	piney	89
52.	<i>Lagerstroemia hypoleuca</i>	pyinma	81
53.	<i>Lagerstroemia lanceolata</i>	benteak	96
54.	<i>Lagerstroemia parviflora</i>	lendi	95
55.	<i>Lagerstroemia speciosa</i>	jarul	82
56.	* <i>Machilus odoratissima</i>	machilus	90
57.	<i>Madhuca longifolia</i>	mahua	79
58.	* <i>Mangifera indica</i>	mango	78
59.	<i>Mesua assamica</i>	sianahor (kayea)	121
60.	* <i>Mesua floribunda</i>	karol	104
61.	<i>Michelia champaca</i>	champ	73
62.	* <i>Miliusa tomentosa</i>	hoom	97
63.	* <i>Mitragyna parvifolia</i>	kaim	74
64.	<i>Ougenia oojeinensis</i>	sandan	79
65.	<i>Palaquium ellipticum</i>	pali	100
66.	* <i>Palaquium polyanthum</i>	tali	100

*Subject to treatment prescribed in A-2.

Sl No.	Botanical Name	Trade Name	Comparative Strength Coefficient for Pallets with Teak Taken as 100
67.	<i>Phoebe hainesis</i>	bonsum	82
68.	* <i>Planchonia andamanica</i>	red bombwe	111
69.	* <i>Pongamia pinnata</i>	karanji	82
70.	* <i>Prosopis cineraria</i>	jhand	91
71.	* <i>Prosopis juliflora</i>	—	89
72.	<i>Protium serratum</i>	murtenga	104
73.	<i>Pterocarpus marsupium</i>	bijasal	101
74.	* <i>Pteropurum acerifolium</i>	hathipaila	87
75.	<i>Quercus</i> spp.	Indian oak	105
76.	* <i>Schima wallichii</i>	chilauni	88
77.	* <i>Shorea assamica</i>	makai	75
78.	<i>Shorea robusta</i>	sal	121
79.	<i>Sonneratia apetala</i>	keora	72
80.	* <i>Stereospermum</i> spp.	padri	84
81.	<i>Syzygium cumini</i>	jaman	98
82.	* <i>Syzygium</i> spp.	jaman	100
83.	<i>Terminalia alata</i>	laurel	103
84.	<i>Terminalia arjuna</i>	arjun	74
85.	* <i>Terminalia bellirica</i>	bahera	91
86.	* <i>Terminalia bialata</i>	white chuglam	101
87.	<i>Terminalia chebula</i>	myrobalan	107
88.	* <i>Terminalia citrina</i>	—	104
89.	<i>Terminalia manii</i>	black chuglam	106
90.	* <i>Terminalia myriocarpa</i>	hollock	74
91.	<i>Terminalia paniculata</i>	kindal	101
92.	* <i>Terminalia procera</i>	white bombwe	79
93.	* <i>Vateria indica</i>	vellapine	89
94.	<i>Xylia xylocarpa</i>	irul	107
95.	<i>Zanthoxylum rhetsa</i>	mullilam	99

A-2 TREATMENT

A-2.1 When timbers marked with asterisk (*) or sapwood of the other timbers in the list are used, these shall be treated with 4 percent boric acid : borax solution as stipulated for pallets in IS 401 : 1982.

*Subject to treatment prescribed in A-2.

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